

SCIENCE AND INVENTION.

Work of the World's Busy Brains in Discovering, Inventing and Creating.

DAMMING LAKE ERIE.

The proposition to throw a dam across the outlet of Lake Erie seems to be gathering force. It is undoubtedly that such a dam would be of much value to commerce and to the electric plants at Niagara. Lake Erie is virtually a very wide and comparatively shallow river into which all the water from Lakes Superior, Michigan and Huron empties. These are all much higher above sea level than Lake Erie, which is also smaller than any of the others. The direction of the Lake is in the course of the prevailing winds, and these having a sweep along its surface of 230 miles, the tendency is to pile up the water at one end or the other, according to the winds. This is most noticeable in the eastern end, as the prevailing winds are from the southwest, and when they prevail for any length of time they pile up the water to a great depth at the outlet. The Lake narrows down rapidly from the average width of 65 miles to about half a mile at the entrance of Niagara River. There the depth of the water is about 20 feet normally, but when the waters are piled up the discharge over the falls is immensely increased. A low dam of seven or eight feet above the surface of the water, or perhaps 30 feet high altogether, would conserve a vast volume of water until it was needed, and it would increase the depth in the harbors of Cleveland, Sandusky, Toledo, Monroe and elsewhere, so as to give much greater facility for the large vessels now employed in the lake trade. The level would be kept more nearly constant, which would be to the advantage of the vessels, since after the prevalence of a strong southwest wind the water sinks to a low point and remains there until the inflow from Lake Huron will fill it up again to the normal point.

RECEIPTS AND EXPENDITURES OF THE PATENT OFFICE.

The report of the Commissioner of Patents to Congress for the year ended Dec. 31, 1905, gives the following figures:

Receipts from applications	\$1,626,280.00
For copies	132,116.80
Recording assignments	27,683.52
Subscriptions to Official Gazette	13,251.32
Registration of prints and labels	7,841.50
Total	\$1,806,758.14

The following were the expenditures:

Salaries	\$853,894.70
Scientific library	1,663.37
Transportation of public relations to foreign countries	957.75
International Union for Protection of Industrial Property	701.77
Stationery	12,748.87
Postage on foreign matter	2,526.00
Furniture	6,109.77
Carpets	1,137.70
Ice	336.60
Telephone	1,000.90
Washing towels	178.39
Sundries	5,158.80
Law library	482.00
Official Gazette (subscriptions, paid contractor)	71,791.40
Photolithography, paid contractor	125,571.82
Printing and binding, paid Public Printer for Official Gazette, indexes, printing specifications, and miscellaneous work	395,251.38
Total	\$1,479,633.22

This leaves a surplus of \$327,124.92 and makes the balance on hand in the Treasury of the United States on account of the Patent fund Jan. 1, 1906, \$6,199,991.68.

In concluding his report the Commissioner of Patents says: "The most important event in the business of this Office during the year 1905 was the passage and taking effect of the new trade-mark law of Feb. 20, 1905. This act reduced the fee upon filing an application for trade-mark from \$25 to \$10, and immediately resulted in a great increase in the number of trade-mark applications. The increase may be appreciated by comparing the number of applications received in the year 1905, 16,224, with the number in the preceding year, 2,524. The number filed in the past year thus being about six and one-half times the number filed the preceding year. The work thus laid upon this Office in the transaction of this large amount of new business has made it necessary to increase the force employed in the Trade-Mark Division and has laid heavy burdens upon the Examining Division from which this force was drawn, as well as upon the clerical force drawn upon for the performance of the additional clerical work. To this should be added the increase in the number of applications for patents for the year 1905, such increase being 2,866. The great increase in these two branches of our work has overtaxed the present force of this Office, which is not able to keep this work up to a satisfactory state of promptness under the existing conditions. I consider it a matter of absolute necessity for the prompt and satisfactory transaction of the work of this Office that an increase of force, both of examiners and of clerks, be provided by Congress, and estimates for increases in our force have been submitted for this reason."

TUBERCULOSIS SERUM. Prof. Emil von Behring, who discovered the diphtheria serum, adheres to his resolution to keep his tuberculosis remedy secret till autumn. At the same time he is sanguine of making progress in the development of the remedy. His aim is to secure a milk which will immunize persons to tuberculosis, and is ready to say that he sees that end in view. Cows are treated when very young with a fluid which he calls tuberculin. This is injected under the skin repeatedly for two weeks or more, and Prof. Behring's theory is that children fed on milk from these cows will eventually become immune to tuberculosis.

The question of using tulle for life preservers is now before the Secretary of Commerce and Labor. This kind of life preservers were furnished to the Valencia, which was recently wrecked off the coast of Washington, and it is said were found to be practically worthless. The previous tests made by Rear-Admiral Kempf seemed to demonstrate that tulle was superior to anything else for this purpose, as life preservers weighing three pounds were found capable of sustaining 27 pounds of iron for more than 90 days. In these experiments the reeds were wired together with the ends unbound, but dipped in paraffine. The weight of the average

human body in water is 12 pounds, and the tests seemed to show that tulle life preservers were capable of supporting more than double this weight. The matter will be taken up by the special commission appointed to investigate the Valencia disaster.

Some of the results of the long experience and careful experiments of the Pennsylvania Railroad in the matter of paints are being made known. No kind of paint will do equally well for all situations. Asphalt paints are much better in sheltered positions than in the sun; linseed oil paints are better in the sun than in damp places. It has been found advisable in the case of train-shed roofs in Jersey City and elsewhere to cover each iron or steel member with a thin paraffin paper smoothed on to a coat of undried paint. This is afterward painted with two coats, which seems to protect the metal firmly against engine fumes. Pure oxide of iron in linseed oil seems to be generally the best preservative of iron and steel.

There are turbine engines now in use in Europe and America aggregating over 1,000,000-horsepower. It is the most astonishing development in the history of engine building.

Work of the Patent Office. For the week ended Feb. 13, 1906, the Patent Office issued 627 patents, 12 designs, 231 trade-marks, 11 labels and three re-issues, making a total of 884, of which 556 patents and 237 trade-marks went to citizens of the United States and 83 patents and five trade-marks to citizens of other countries.

Combined Hair-Brush and Comb. Alpine McKenzie, Evangeline, La., would facilitate the operation of dressing in the morning by a combination

of a hair-brush and comb. A spring thrusts out a comb from the brush when it is desired to use it and it can again recede into the handle.

Comb. Now you can have your hair treated while you wait or sit around and sew or read the latest novel. Charles M. Shubert, Philadelphia, Pa., has patented

a comb the teeth of which are hollow tubes containing a reservoir in the back of the comb and so arranged that the liquid contained therein will have a steady and moderate flow to the roots of the hair.

Bit Brace. Jacob Gessert, Buffalo, N. Y., has received a patent for a bit brace which

has two handles, one to hold the bit firmly in its place and the other to rotate a gear which revolves the bit.

Shlinging-Hatchet. Combination tools are all the go now, and William V. Brown, Berwick, Canada, has received a patent for a

hatchet with a thin, long blade upon which is a plane-bit and a chip-breaker, and the hammer head is used as a claw.

Combined Knife, Fork, Can-Opener and Saw. Charles Helmuth, New York, N. Y., has obtained a patent for a combined knife, fork, can-opener and saw, which

he thinks will meet the wants of a large class, but just what class it is difficult to understand.

Rake. Francis A. Rogg, Greenfield, Mass., has obtained a patent for a new form

of rake having two sets of bows to hold the head firmly, each of the bows being made of light metal tubing.

Wagon Brake. Jacob Hoppel, Anchorage, Ky., has received a patent for a wagon brake

which allows the draft upon the tongue to be thrown upon a brake on the wheels.

Dr. Shoop's Restorative Tablets give full three weeks treatment. Each form—liquid or tablet—has equal merit. Druggists everywhere.

For the free book and the "Health Token" you must address Dr. Shoop, Box 551, Racine, Wis. State which book you want.

Book 1 on Dyspepsia
Book 2 on the Heart
Book 3 on the Kidney
Book 4 for Women
Book 5 for Men
Book 6 on Rheumatism.

Dr. Shoop's Restorative Tablets give full three weeks treatment. Each form—liquid or tablet—has equal merit. Druggists everywhere.

Dr. Shoop's Restorative Tablets give full three weeks treatment. Each form—liquid or tablet—has equal merit. Druggists everywhere.

Dr. Shoop's Restorative Tablets give full three weeks treatment. Each form—liquid or tablet—has equal merit. Druggists everywhere.

Dr. Shoop's Restorative Tablets give full three weeks treatment. Each form—liquid or tablet—has equal merit. Druggists everywhere.

Dr. Shoop's Restorative Tablets give full three weeks treatment. Each form—liquid or tablet—has equal merit. Druggists everywhere.

Dr. Shoop's Restorative Tablets give full three weeks treatment. Each form—liquid or tablet—has equal merit. Druggists everywhere.

Dr. Shoop's Restorative Tablets give full three weeks treatment. Each form—liquid or tablet—has equal merit. Druggists everywhere.

Dr. Shoop's Restorative Tablets give full three weeks treatment. Each form—liquid or tablet—has equal merit. Druggists everywhere.

Dr. Shoop's Restorative Tablets give full three weeks treatment. Each form—liquid or tablet—has equal merit. Druggists everywhere.

Dr. Shoop's Restorative Tablets give full three weeks treatment. Each form—liquid or tablet—has equal merit. Druggists everywhere.

Tire Protector.

Of tire protectors there is an abundance. John E. Caps, Kansas City, Mo., has patented a tire protector which has on the outside of the pneumatic tube

a strip of resilient material, leather, hard rubber, or other material, which is connected by rivets to sheet metal. The rivets' heads prevent slipping.

Lewis Slama, Humboldt, Neb., has patented a rubber tire guard composed

of a network of alternating, cruciform links and link rings with means of securing the same to the tire.

Hat. Gideon D. Lorsch, New York, N. Y., has patented a bad-weather hat which

has the regular sou'wester features with ear-protecting pieces and chin-straps to hold the hat firmly on the head.

Paper-Hanging Device. Arthur C. Harris, Lagrange, Ore., has patented a handy device for paper

hangers consisting of a brush upon the handle of which are rule or measure, a roller, cutter and levels.

Production of Aluminum. The production of aluminum in the United States has increased nearly tenfold in as many years. The output of 1904 was 8,500,000 pounds, as compared with 7,500,000 pounds in 1903, and 7,300,000 pounds in 1902. When it is remembered that the industry dates its beginning from 1883 in which year

the production was 83 pounds, its rapid development will be appreciated.

Weak Kidneys. It is of little use to try to doctor the kidneys themselves. Such treatment is wrong. For the kidneys are not usually to blame for their weaknesses or irregularities. They have no power—no self-control. They are operated and actuated by a tiny shred of a nerve which is largely responsible for their condition. If the kidney nerve is strong and healthy the kidneys are strong and healthy. If the kidney nerve goes wrong, you know it by the inevitable result—kidney trouble.

This tender nerve is only one of a great system of nerves. This system controls not only the kidneys, but the heart and the liver, and the stomach. For simplicity's sake Dr. Shoop has called this great nerve system the "Inside Nerve." They are not the nerves of feeling—not the nerves that enable you to walk, to talk, to act, to think. They are the master nerves, and every vital organ is their slave. The common name for these nerves is the "sympathetic nerves" because each set is in such close sympathy with the others, that weakness anywhere usually results in weakness everywhere.

The one remedy which aims to treat not the kidneys themselves, but the nerves which are to blame, is known by physicians and druggists everywhere as Dr. Shoop's Restorative (Tablets or Liquid). This remedy is not a symptom remedy—it is a cause remedy. While it usually brings speedy relief, its effects are also lasting.

If you would like to read an interesting book on the inside nerve disease, write Dr. Shoop. With the book he will send you the "Health Token"—an intended passport to good health. Both the book and the "Health Token" are free.

For the free book and the "Health Token" you must address Dr. Shoop, Box 551, Racine, Wis. State which book you want.

Book 1 on Dyspepsia
Book 2 on the Heart
Book 3 on the Kidney
Book 4 for Women
Book 5 for Men
Book 6 on Rheumatism.

Dr. Shoop's Restorative Tablets give full three weeks treatment. Each form—liquid or tablet—has equal merit. Druggists everywhere.

Dr. Shoop's Restorative Tablets give full three weeks treatment. Each form—liquid or tablet—has equal merit. Druggists everywhere.

Dr. Shoop's Restorative Tablets give full three weeks treatment. Each form—liquid or tablet—has equal merit. Druggists everywhere.

Dr. Shoop's Restorative Tablets give full three weeks treatment. Each form—liquid or tablet—has equal merit. Druggists everywhere.

Dr. Shoop's Restorative Tablets give full three weeks treatment. Each form—liquid or tablet—has equal merit. Druggists everywhere.

Dr. Shoop's Restorative Tablets give full three weeks treatment. Each form—liquid or tablet—has equal merit. Druggists everywhere.

Dr. Shoop's Restorative Tablets give full three weeks treatment. Each form—liquid or tablet—has equal merit. Druggists everywhere.

Dr. Shoop's Restorative Tablets give full three weeks treatment. Each form—liquid or tablet—has equal merit. Druggists everywhere.

Dr. Shoop's Restorative Tablets give full three weeks treatment. Each form—liquid or tablet—has equal merit. Druggists everywhere.

Dr. Shoop's Restorative Tablets give full three weeks treatment. Each form—liquid or tablet—has equal merit. Druggists everywhere.

Dr. Shoop's Restorative Tablets give full three weeks treatment. Each form—liquid or tablet—has equal merit. Druggists everywhere.

Dr. Shoop's Restorative Tablets give full three weeks treatment. Each form—liquid or tablet—has equal merit. Druggists everywhere.

Dr. Shoop's Restorative Tablets give full three weeks treatment. Each form—liquid or tablet—has equal merit. Druggists everywhere.

Dr. Shoop's Restorative Tablets give full three weeks treatment. Each form—liquid or tablet—has equal merit. Druggists everywhere.

Dr. Shoop's Restorative Tablets give full three weeks treatment. Each form—liquid or tablet—has equal merit. Druggists everywhere.

Dr. Shoop's Restorative Tablets give full three weeks treatment. Each form—liquid or tablet—has equal merit. Druggists everywhere.

Dr. Shoop's Restorative Tablets give full three weeks treatment. Each form—liquid or tablet—has equal merit. Druggists everywhere.

Dr. Shoop's Restorative Tablets give full three weeks treatment. Each form—liquid or tablet—has equal merit. Druggists everywhere.

Dr. Shoop's Restorative Tablets give full three weeks treatment. Each form—liquid or tablet—has equal merit. Druggists everywhere.

Dr. Shoop's Restorative Tablets give full three weeks treatment. Each form—liquid or tablet—has equal merit. Druggists everywhere.

Dr. Shoop's Restorative Tablets give full three weeks treatment. Each form—liquid or tablet—has equal merit. Druggists everywhere.

Dr. Shoop's Restorative Tablets give full three weeks treatment. Each form—liquid or tablet—has equal merit. Druggists everywhere.

GASOLINE-ELECTRIC CAR.

A Very Successful Trial of a New Model by the Delaware & Hudson Railroad.

Recently there was a trial, which resulted very successfully, of a new model of a gasoline car by the Delaware & Hudson Railroad. It was built according to the plans of Messrs. C. H. Schenck and C. H. Schenck at the Company's shops in Schenectady, and tested by a run from that city to Saratoga. A number of the officials of the road and the General Electric Company were in the car when the trial was made, and all expressed the greatest satisfaction at the result. The highest speed made was the 30 miles an hour, and the car was made in one minute and 37

seconds. High speed, however, is not what is especially desired, but ease of starting and stopping, ease of running and freedom from accidents and breakdowns; also economy in operating. This was quite evident, as it required but one gallon of gasoline to make the fastest mile that was run. There was not a single breakdown of any portion of the machinery during the test. One of the gratifying features was the rapid acceleration of speed, showing the adaptability of the car to frequent stops. From a complete standstill a speed of 30 miles an hour was quickly picked up and the power of the engine was such as to show that if necessary a train of three or four trailers might have been hauled. In appearance the car does not differ from the ordinary model, but at one end is a gasoline engine driving an electric dynamo, and the wheels are run by motors placed on the trucks. The engine is of 150 horse-power, and the car can be run in either direction. A complete air-cooling device is provided, and the car is heated by water coming from the coolers on the gasoline engine. It is lighted by electricity. The success of this experimental car will lead the company to order the building of a great number for local traffic on the main and branch lines.

THE ALADDIN COOKER. A Device Which It Is Claimed Will Greatly Reduce the Cost of Living.

The late Edward Atkinson, the eminent economist, was deeply interested in the Aladdin Cooker, a device which he felt sure would greatly reduce the expense of food preparation in the kitchen, and thus increase the comforts of every class. The theory of the device is that heat could be accumulated from a common lamp inside of a pine box in such quantities as to cook anything that was desired. He succeeded in demonstrating that all meats, birds, fish, oatmeal, corn meal and farin could be properly roasted or stewed, soups or broths made and other culinary operations carried on by the heat of a common lamp with a one-inch wick. Edward Atkinson wrote unanimously on this subject, and made many lecture courses to introduce the device to the people everywhere. The cut shows the device with its dimensions and details of construction.

A box made of pine wood, 1 1/2 by 3 inches thick, according to size of cooker; B, lining of tin or tinned copper, fitted with arm, B', of copper, through which the water, G, circulates and in which it is heated by the lamp, L; the cooking vessel, which may be of metal, preferably of porcelain or of glass. D, felt lining to cover the cord attached to perforated ears or rings, F; F, G G G, water in circulation, heated by lamp, L, to about 200 degrees Fahrenheit, hood of tin around the lamp, H, vent to tin hood for draught; J, tin guard to

draw off water; K, faucet to draw off water; L, wood with wick, 1/2 to 1 inch wide, according to size of cooker; M, orifice for thermometer; N, orifice for thermometer; O, orifice for thermometer; P, orifice for thermometer; Q, orifice for thermometer; R, orifice for thermometer; S, orifice for thermometer; T, orifice for thermometer; U, orifice for thermometer; V, orifice for thermometer; W, orifice for thermometer; X, orifice for thermometer; Y, orifice for thermometer; Z, orifice for thermometer; AA, orifice for thermometer; BB, orifice for thermometer; CC, orifice for thermometer; DD, orifice for thermometer; EE, orifice for thermometer; FF, orifice for thermometer; GG, orifice for thermometer; HH, orifice for thermometer; II, orifice for thermometer; JJ, orifice for thermometer; KK, orifice for thermometer; LL, orifice for thermometer; MM, orifice for thermometer; NN, orifice for thermometer; OO, orifice for thermometer; PP, orifice for thermometer; QQ, orifice for thermometer; RR, orifice for thermometer; SS, orifice for thermometer; TT, orifice for thermometer; UU, orifice for thermometer; VV, orifice for thermometer; WW, orifice for thermometer; XX, orifice for thermometer; YY, orifice for thermometer; ZZ, orifice for thermometer; AAA, orifice for thermometer; BBB, orifice for thermometer; CCC, orifice for thermometer; DDD, orifice for thermometer; EEE, orifice for thermometer; FFF, orifice for thermometer; GGG, orifice for thermometer; HHH, orifice for thermometer; III, orifice for thermometer; JJJ, orifice for thermometer; KKK, orifice for thermometer; LLL, orifice for thermometer; MMM, orifice for thermometer; NNN, orifice for thermometer; OOO, orifice for thermometer; PPP, orifice for thermometer; QQQ, orifice for thermometer; RRR, orifice for thermometer; SSS, orifice for thermometer; TTT, orifice for thermometer; UUU, orifice for thermometer; VVV, orifice for thermometer; WWW, orifice for thermometer; XXX, orifice for thermometer; YYY, orifice for thermometer; ZZZ, orifice for thermometer; AAAA, orifice for thermometer; BBBB, orifice for thermometer; CCCC, orifice for thermometer; DDDD, orifice for thermometer; EEEE, orifice for thermometer; FFFF, orifice for thermometer; GGGG, orifice for thermometer; HHHH, orifice for thermometer; IIII, orifice for thermometer; JJJJ, orifice for thermometer; KKKK, orifice for thermometer; LLLL, orifice for thermometer; MMMM, orifice for thermometer; NNNN, orifice for thermometer; OOOO, orifice for thermometer; PPPP, orifice for thermometer; QQQQ, orifice for thermometer; RRRR, orifice for thermometer; SSSS, orifice for thermometer; TTTT, orifice for thermometer; UUUU, orifice for thermometer; VVVV, orifice for thermometer; WWWW, orifice for thermometer; XXXX, orifice for thermometer; YYYY, orifice for thermometer; ZZZZ, orifice for thermometer; AAAAA, orifice for thermometer; BBBBB, orifice for thermometer; CCCCC, orifice for thermometer; DDDD, orifice for thermometer; EEEE, orifice for thermometer; FFFF, orifice for thermometer; GGGG, orifice for thermometer; HHHH, orifice for thermometer; IIII, orifice for thermometer; JJJJ, orifice for thermometer; KKKK, orifice for thermometer; LLLL, orifice for thermometer; MMMM, orifice for thermometer; NNNN, orifice for thermometer; OOOO, orifice for thermometer; PPPP, orifice for thermometer; QQQQ, orifice for thermometer; RRRR, orifice for thermometer; SSSS, orifice for thermometer; TTTT, orifice for thermometer; UUUU, orifice for thermometer; VVVV, orifice for thermometer; WWWW, orifice for thermometer; XXXX, orifice for thermometer; YYYY, orifice for thermometer; ZZZZ, orifice for thermometer; AAAAA, orifice for thermometer; BBBBB, orifice for thermometer; CCCCC, orifice for thermometer; DDDD, orifice for thermometer; EEEE, orifice for thermometer; FFFF, orifice for thermometer; GGGG, orifice for thermometer; HHHH, orifice for thermometer; IIII, orifice for thermometer; JJJJ, orifice for thermometer; KKKK, orifice for thermometer; LLLL, orifice for thermometer; MMMM, orifice for thermometer; NNNN, orifice for thermometer; OOOO, orifice for thermometer; PPPP, orifice for thermometer; QQQQ, orifice for thermometer; RRRR, orifice for thermometer; SSSS, orifice for thermometer; TTTT, orifice for thermometer; UUUU, orifice for thermometer; VVVV, orifice for thermometer; WWWW, orifice for thermometer; XXXX, orifice for thermometer; YYYY, orifice for thermometer; ZZZZ, orifice for thermometer; AAAAA, orifice for thermometer; BBBBB, orifice for thermometer; CCCCC, orifice for thermometer; DDDD, orifice for thermometer; EEEE, orifice for thermometer; FFFF, orifice for thermometer; GGGG, orifice for thermometer; HHHH, orifice for thermometer; IIII, orifice for thermometer; JJJJ, orifice for thermometer; KKKK, orifice for thermometer; LLLL, orifice for thermometer; MMMM, orifice for thermometer; NNNN, orifice for thermometer; OOOO, orifice for thermometer; PPPP, orifice for thermometer; QQQQ, orifice for thermometer; RRRR, orifice for thermometer; SSSS, orifice for thermometer; TTTT, orifice for thermometer; UUUU, orifice for thermometer; VVVV, orifice for thermometer; WWWW, orifice for thermometer; XXXX, orifice for thermometer; YYYY, orifice for thermometer; ZZZZ, orifice for thermometer; AAAAA, orifice for thermometer; BBBBB, orifice for thermometer; CCCCC, orifice for thermometer; DDDD, orifice for thermometer; EEEE, orifice for thermometer; FFFF, orifice for thermometer; GGGG, orifice for thermometer; HHHH, orifice for thermometer; IIII, orifice for thermometer; JJJJ, orifice for thermometer; KKKK, orifice for thermometer; LLLL, orifice for thermometer; MMMM, orifice for thermometer; NNNN, orifice for thermometer; OOOO, orifice for thermometer; PPPP, orifice for thermometer; QQQQ, orifice for thermometer; RRRR, orifice for thermometer; SSSS, orifice for thermometer; TTTT, orifice for thermometer; UUUU, orifice for thermometer; VVVV, orifice for thermometer; WWWW, orifice for thermometer; XXXX, orifice for thermometer; YYYY, orifice for thermometer; ZZZZ, orifice for thermometer; AAAAA, orifice for thermometer; BBBBB, orifice for thermometer; CCCCC, orifice for thermometer; DDDD, orifice for thermometer; EEEE, orifice for thermometer; FFFF, orifice for thermometer; GGGG, orifice for thermometer; HHHH, orifice for thermometer; IIII, orifice for thermometer; JJJJ, orifice for thermometer; KKKK, orifice for thermometer; LLLL, orifice for thermometer; MMMM, orifice for thermometer; NNNN, orifice for thermometer; OOOO, orifice for thermometer; PPPP, orifice for thermometer; QQQQ, orifice for thermometer; RRRR, orifice for thermometer; SSSS, orifice for thermometer; TTTT, orifice for thermometer; UUUU, orifice for thermometer; VVVV, orifice for thermometer; WWWW, orifice for thermometer; XXXX, orifice for thermometer; YYYY, orifice for thermometer; ZZZZ, orifice for thermometer; AAAAA, orifice for thermometer; BBBBB, orifice for thermometer; CCCCC, orifice for thermometer; DDDD, orifice for thermometer; EEEE, orifice for thermometer; FFFF, orifice for thermometer; GGGG, orifice for thermometer; HHHH, orifice for thermometer; IIII, orifice for thermometer; JJJJ, orifice for thermometer; KKKK, orifice for thermometer; LLLL, orifice for thermometer; MMMM, orifice for thermometer; NNNN, orifice for thermometer; OOOO, orifice for thermometer; PPPP, orifice for thermometer; QQQQ, orifice for thermometer; RRRR, orifice for thermometer; SSSS, orifice for thermometer; TTTT, orifice for thermometer; UUUU, orifice for thermometer; VVVV, orifice for thermometer; WWWW, orifice for thermometer; XXXX, orifice for thermometer; YYYY, orifice for thermometer; ZZZZ, orifice for thermometer; AAAAA, orifice for thermometer; BBBBB, orifice for thermometer; CCCCC, orifice for thermometer; DDDD, orifice for thermometer; EEEE, orifice for thermometer; FFFF, orifice for thermometer; GGGG, orifice for thermometer; HHHH, orifice for thermometer; IIII, orifice for thermometer; JJJJ, orifice for thermometer; KKKK, orifice for thermometer; LLLL, orifice for thermometer; MMMM, orifice for thermometer; NNNN, orifice for thermometer; OOOO, orifice for thermometer; PPPP, orifice for thermometer; QQQQ, orifice for thermometer; RRRR, orifice for thermometer; SSSS, orifice for thermometer; TTTT, orifice for thermometer; UUUU, orifice for thermometer; VVVV, orifice for thermometer; WWWW, orifice for thermometer; XXXX, orifice for thermometer; YYYY, orifice for thermometer; ZZZZ, orifice for thermometer; AAAAA, orifice for thermometer; BBBBB, orifice for thermometer; CCCCC, orifice for thermometer; DDDD, orifice for thermometer; EEEE, orifice for thermometer; FFFF, orifice for thermometer; GGGG, orifice for thermometer; HHHH, orifice for thermometer; IIII, orifice for thermometer; JJJJ, orifice for thermometer; KKKK, orifice for thermometer; LLLL, orifice for thermometer; MMMM, orifice for thermometer; NNNN, orifice for thermometer; OOOO, orifice for thermometer; PPPP, orifice for thermometer; QQQQ, orifice for thermometer; RRRR, orifice for thermometer; SSSS, orifice for thermometer; TTTT, orifice for thermometer; UUUU, orifice for thermometer; VVVV, orifice for thermometer; WWWW, orifice for thermometer; XXXX, orifice for thermometer; YYYY, orifice for thermometer; ZZZZ, orifice for thermometer; AAAAA, orifice for thermometer; BBBBB, orifice for thermometer; CCCCC, orifice for thermometer; DDDD, orifice for thermometer; EEEE, orifice for thermometer; FFFF, orifice for thermometer; GGGG, orifice for thermometer; HHHH, orifice for thermometer; IIII, orifice for thermometer; JJJJ, orifice for thermometer; KKKK, orifice for thermometer; LLLL, orifice for thermometer; MMMM, orifice for thermometer; NNNN, orifice for thermometer; OOOO, orifice for thermometer; PPPP, orifice for thermometer; QQQQ, orifice for thermometer; RRRR, orifice for thermometer; SSSS, orifice for thermometer; TTTT, orifice for thermometer; UUUU, orifice for thermometer; VVVV, orifice for thermometer; WWWW, orifice for thermometer; XXXX, orifice for thermometer; YYYY, orifice for thermometer; ZZZZ, orifice for thermometer; AAAAA, orifice for thermometer; BBBBB, orifice for thermometer; CCCCC, orifice for thermometer; DDDD, orifice for thermometer; EEEE, orifice for thermometer; FFFF, orifice for thermometer; GGGG, orifice for thermometer; HHHH, orifice for thermometer; IIII, orifice for thermometer; JJJJ, orifice for thermometer; KKKK, orifice for thermometer; LLLL, orifice for thermometer; MMMM, orifice for thermometer; NNNN, orifice for thermometer; OOOO, orifice for thermometer; PPPP, orifice for thermometer; QQQQ, orifice for thermometer; RRRR, orifice for thermometer; SSSS, orifice for thermometer; TTTT, orifice for thermometer; UUUU, orifice for thermometer; VVVV, orifice for thermometer; WWWW, orifice for thermometer; XXXX, orifice for thermometer; YYYY, orifice for thermometer; ZZZZ, orifice for thermometer; AAAAA, orifice for thermometer; BBBBB, orifice for thermometer; CCCCC, orifice for thermometer; DDDD, orifice for thermometer; EEEE, orifice for thermometer; FFFF, orifice for thermometer; GGGG, orifice for thermometer; HHHH, orifice for thermometer; IIII, orifice for thermometer; JJJJ, orifice for thermometer; KKKK, orifice for thermometer; LLLL, orifice for thermometer; MMMM, orifice for thermometer; NNNN, orifice for thermometer; OOOO, orifice for thermometer; PPPP, orifice for thermometer; QQQQ, orifice for thermometer; RRRR, orifice for thermometer; SSSS, orifice for thermometer; TTTT, orifice for thermometer; UUUU, orifice for thermometer; VVVV, orifice for thermometer; WWWW, orifice for thermometer; XXXX, orifice for thermometer; YYYY, orifice for thermometer; ZZZZ, orifice for thermometer; AAAAA, orifice for thermometer; BBBBB, orifice for thermometer; CCCCC, orifice for thermometer; DDDD, orifice for thermometer; EEEE, orifice for thermometer; FFFF, orifice for thermometer; GGGG, orifice for thermometer; HHHH, orifice for thermometer; IIII, orifice for thermometer; JJJJ, orifice for thermometer; KKKK, orifice for thermometer; LLLL, orifice for thermometer; MMMM, orifice for thermometer; NNNN, orifice for thermometer; OOOO, orifice for thermometer; PPPP, orifice for thermometer; QQQQ, orifice for thermometer; RRRR, orifice for thermometer; SSSS, orifice for thermometer; TTTT, orifice for thermometer; UUUU, orifice for thermometer; VVVV, orifice for thermometer; WWWW, orifice for thermometer; XXXX, orifice for thermometer; YYYY, orifice for thermometer; ZZZZ, orifice for thermometer; AAAAA, orifice for thermometer; BBBBB, orifice for thermometer; CCCCC, orifice for thermometer; DDDD, orifice for thermometer; EEEE, orifice for thermometer; FFFF, orifice for thermometer; GGGG, orifice for thermometer; HHHH, orifice for thermometer; IIII, orifice for thermometer; JJJJ, orifice for thermometer; KKKK, orifice for thermometer; LLLL, orifice for thermometer; MMMM, orifice for thermometer; NNNN, orifice for thermometer; OOOO, orifice for thermometer; PPPP, orifice for thermometer; QQQQ, orifice for thermometer; RRRR, orifice for thermometer; SSSS, orifice for thermometer; TTTT, orifice for thermometer; UUUU, orifice for thermometer; VVVV, orifice for thermometer; WWWW, orifice for thermometer; XXXX, orifice for thermometer; YYYY, orifice for thermometer; ZZZZ, orifice for thermometer; AAAAA, orifice for thermometer; BBBBB, orifice for thermometer; CCCCC, orifice for thermometer; DDDD, orifice for thermometer; EEEE, orifice for thermometer; FFFF, orifice for thermometer; GGGG, orifice for thermometer; HHHH, orifice for thermometer; IIII, orifice for thermometer; JJJJ, orifice for thermometer; KKKK, orifice for thermometer; LLLL, orifice for thermometer; MMMM, orifice for thermometer; NNNN, orifice for thermometer; OOOO, orifice for thermometer; PPPP, orifice for thermometer; QQQQ, orifice for thermometer; RRRR, orifice for thermometer; SSSS, orifice for thermometer; TTTT, orifice for thermometer; UUUU, orifice for thermometer; VVVV, orifice for thermometer; WWWW, orifice for thermometer; XXXX, orifice for thermometer; YYYY, orifice for thermometer; ZZZZ, orifice for thermometer; AAAAA, orifice for thermometer; BBBBB, orifice for thermometer; CCCCC, orifice for thermometer; DDDD, orifice for thermometer; EEEE, orifice for thermometer; FFFF, orifice for thermometer; GGGG, orifice for thermometer; HHHH, orifice for thermometer; IIII, orifice for thermometer; JJJJ, orifice for thermometer; KKKK, orifice for thermometer; LLLL, orifice for thermometer; MMMM, orifice